

REMARKS

Claims 1-20 remain pending in the application. Claims 1-5, 8-10, 12-13, 16-18 and 20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Laberteaux (USPN 6,028,929). Claims 6 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatenable over Laberteaux in view of Caceres et al. (US 6,167,133) and in further view of Romesburg (US 6,185,300). Claims 11, 14, 15 and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Laberteaux in further view of Romesburg (6,507,653). Applicants traverse these rejections and request reconsideration in view of the foregoing amendments and the following remarks.

The Office action objected to the title of the application. Applicants have amended the title, as suggested by the examiner. Withdrawal of the objection is requested.

The Office action objected to the drawings as failing to show every feature of the invention specified in the claims. Specifically, the examiner alleges that one embodiment of the test recited in claim 6, "determining a magnitude of a square of a peak adaptive filter coefficient relative to a threshold" is not shown in the drawings. Applicant traverses the objection. The drawings, specifically FIG. 4 shows a test T6. Test T6 may be embodied a number of different ways, and several embodiments are described in the specification and are set out in claim 6. At page 7, lines 21-15 a particular embodiment of test T6, "determining if the square of the peak adaptive filter coefficient magnitude (peak ADF) is less than a predetermined threshold" Because test T6 is illustrated in the drawings, and because test T6 is described in one embodiment as "determining a magnitude of a square of a peak adaptive filter coefficient relative to a threshold," this limitation claim 6 is satisfactorily shown in the drawings in accordance with 37 C.F.R. § 1.83(a), and the objection should be withdrawn.

Claims 1 and 16 have been rejected allegedly for being anticipated by Laberteaux. Applicants traverse the rejection. Laberteaux teaches an echo canceller system that includes first and second digital filters having corresponding sets of adaptive tap filter coefficients. A coefficient transfer controller is operable to transfer the adaptive tap filter coefficients of the second digital filter to the first digital filter when non-linear echo path is detected.

To detect non-linear echo path, Laberteaux teaches reliance on echo-return-loss-enhancement (ERLE). ERLE is well understood by the person of ordinary skill in the art and is described by both Laberteaux and applicant in their respective patent specifications. In short, ERLE is a measure of the energy difference between pure echo signal and an error signal energy.

As described by applicant, however, ERLE is insufficient on its own to detect non-linear echo path in order to initiate echo canceller adaptation. Applicant asserts, in addition to making the echo canceller responsive to echo canceller divergence based upon linear divergence due to significant echo path change and non-linear echo path, the echo canceller must also distinguish between non-linear echo path resulting from near-end communication and system confined non-linearity. Applicant has amended claims 1 and 16 to clarify this aspect of the invention. Moreover, because Laberteaux teaches use of ERLE alone, and teaches no other structure or functionality for detecting transitions between linear and non-linear echo path, Laberteaux, fails to teach or suggest the present invention. In fact, Laberteaux fairly teaches away from the present invention that recognizes that ERLE alone is insufficient to adequately detect non-linear echo path.

For at least the foregoing reasons, applicant submits claims 1 and 16 are allowable and such action is solicited. Moreover, applicant submits claims 2-15 and 17-20, dependent from claims 1 and 16, respectfully, are allowable and such action is requested.

Without limiting the generality of the foregoing arguments, claim 2 too is allowable. Claim 2 sets forth that the determination of transitions between linear and non-linear echo path relies on performing at least one of a plurality of tests. As described above, Laberteaux solely teaches evaluation of ERLE to determine linear to non-linear echo path transition, and thus fails to teach a plurality of tests.

Without limiting the generality of the foregoing arguments, claims 3-9 are allowable. Claim 3 specifically defines a plurality of tests that may be relied upon to determine linear to non-linear echo path transition, which tests are not taught by Laberteaux. The examiner's comments regarding claim 3 being anticipated by Laberteaux are confusing and not persuasive. The examiner states that, with respect to claim 3, Laberteaux teaches "generat[ing] a synthesized echo estimate to a desired signal energy" and FIG. 6 teaches a plurality of tests. Applicant does not understand the examiner's reasoning with respect to the first portion of the statement and traverses the characterization of FIG. 6 of Laberteaux. FIG. 6, consistent with the overall teaching of Laberteaux, describes only evaluation of the parameters \hat{E} and \bar{E} , i.e., ERLE values corresponding to use of the first and second tap filter coefficients, to detect linear to non-linear echo path transition. This is not a plurality of tests but a single test of one parameter.

Regarding claims 10 and 15, the examiner asserts that Laberteaux teaches "determining whether the response is linear or non-linear." This does not relate to the subject matter of claim 10, namely the manner in which the echo canceller is adapted responsive to determination of linear or non-linear echo path. Laberteaux teaches only substitution of a first set of filter coefficients for a second set of filter coefficients. Laberteaux does not teach the recited steps associated with the prescribed logic routine implemented once the transition between linear and non-linear echo path is determined. Thus, claims 10-15 are allowable.

In view of the foregoing amendments and remarks, the prompt issuance of a notice of allowance is respectfully solicited. The examiner is cordially invited to contact applicant's undersigned attorney with any questions regarding this paper or the application as a whole.

Respectfully submitted,
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